TECHNICAL REVIEW DOCUMENT
for
MODIFICATION TO OPERATING PERMIT 95OPEA041

Centex Eagle Gypsum, LLC
Eagle County
Source ID 0370029

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I. Purpose:

This document establishes the decisions made regarding the requested modifications to the Operating Permit for Eagle Gypsum. This document provides information describing how the type of modification was determined (i.e. minor or significant), the modeling inputs and results as well as describing the changes made to the permit as requested by the source and the changes made due to the Division's analysis. This document is designed for reference during review of the proposed permit by EPA and for future reference by the Division to aid in any additional permit modifications at this facility. The conclusions made in this report are based on the information provided in the original request for modification submitted to the Division on April 10, 1997, additional submittals of August 11, October 8, October 31, and December 30, 1997 and numerous telephone conversations with the source.

II. Description of Permit Modification Request

The Operating Permit for Eagle-Gypsum was issued on June 17, 1997. The source's original request to modify their Operating Permit was received April 10, 1997. Since the Operating Permit had already gone through Public Comment and the source would not be prepared to make the modifications until early 1998, the Division determined and the source agreed that the modification would be made after the Operating Permit had been issued. This modification request was to allow for annual wallboard production of 750,000 MSF/yr and annual gypsum rock usage of 700,000 tons/yr as well as associated natural gas increases. The requested changes affect all emission units with the exception of the diesel generators (P018) and the waste reclaim system (P020). The increased production would result in facility wide emission increases as follows:

Pollutant	Increase (tons/yr)
PM	8.5
PM_{10}	8.0
SO_2	0.1
NO_X	29.6
CO	10.7
VOC	Negl.

In the source's request for minor modification processing, received October 8, 1997, the source requested that the Responsible Official be changed and that performance testing requirements be removed for two units, the crushed ore storage bins (P010) and the accelerator mill (P011).

III. Determination of Modification Type

After a review of the request by the source to modify their Operating Permit, the decision was made to process this modification, with the exception of the request to remove performance testing requirements from the accelerator mill (P011), as a minor modification following the procedures in Colorado Regulation 3, Part C.X. The intent of this portion of the Technical Review Document is to record the thought process behind the decisions made for this particular modification and to aid in decisions for future Operating Permit modifications at this facility and at other Title V facilities.

Synthetic Minor Considerations

Regulation 3, Part C, Section X.A.4.a indicates that minor modifications cannot be changes seeking to establish or change a permit condition for which there is no corresponding applicable requirement and the source has assumed to avoid an applicable requirement such as taking emission limits to get synthetic minor status for the purposes of Prevention of Significant Deterioration (PSD) requirements. Information in the master files indicates that the Division considered this source to be a synthetic minor for PSD purposes. Upon further review, however, the synthetic minor status is somewhat questionable.

The primary reason this source was considered a synthetic minor source was due to the natural gas-fired turbines. These turbines are subject to New Source Performance Standards (NSPS) Subpart GG. According to the original evaluation for these units, the NSPS standards of 150 ppm (SO_2) and 170 ppm (NO_X) equate to 220 tpy and 250 tpy respectively. Therefore the Division concluded the the permit issued was a synthetic minor permit for NO_X. However, using AP-42 emission factors for both turbines operating at maximum fuel design rate (mmBtu/hr) and 8760 hrs/yr, the PTE of both turbines is much less than 250 tons/yr. Subsequent stack testing indicated that the turbines are

operating at a rate slightly above the AP-42 emission factor. When AP-42 is used to determine PTE for the turbines the facility wide emissions for NO_X are less than 250 tpy.

This facility can also be viewed as synthetic minor for PM and PM_{10}, since virtually all of the major PM sources have baghouses. However, all but two of the PM sources are subject to NSPS OOO and subsequently have a 0.05 g/dSCM standard. Considering the NSPS standard, the facility wide PTE for PM and PM_{10} is less than 250 tpy. PTE of the two non-NSPS sources is based on uncontrolled, permitted emission rates. The assumption is that since these two units are in a process system with the NSPS units that their production rates will be limited by the operation of the NSPS units (in order for NSPS unit to comply with the 0.05 g/dSCM standard). This assumption, coupled with the NSPS limits, yields a facility wide PTE of less than 250 tpy of PM and PM_{10}.

Based on the above discussion, the Division now believes that this facility is not a synthetic minor source. The Division also believes that even if this facility is considered a synthetic minor source that the requested modification can be considered a minor modification, since the source still retains its synthetic minor status and no new equipment has been added. With the permit modification, the facility wide emission limits for NO_X will still be less than 200 tpy and the PM and PM_{10} emissions are 54 tpy and 18 tpy, respectively. The increase in emissions is due completely to increased production and not due to the addition of any emission units.

NSPS Considerations

Part A, Section I.B.36.h and Part D (Statements of Basis) of Regulation 3 make it clear that a Title I modification cannot be processed as a minor modification and must be processed as a significant modification. Specifically, a modification that triggers New Source Performance Standards (NSPS) cannot be processed as a minor modification. Since several of these units are already subject to NSPS standards and no new NSPS standards are triggered, the Division has determined that this modification can be processed as a minor modification.

Significant Emission Changes

Another specific example of a Title I modification, provided in Reg 3, Part D, is a modification that triggers PSD and NSR review or in other words exceeds the significance levels for PSD or major NSR review. If a modification exceeds the significance levels then it cannot be processed as a minor modification. The significance levels of concern in this modification are NO_X (40 tpy), PM (25 tpy) and PM_{10} (10 tpy). The NO_X significance level is clearly not exceeded by this modification. For the PM and PM_{10} levels, the Division determined that controlled emission increases would be considered since all of the units had previously been issued construction permits requiring baghouses. Increases in

PM and PM_{10} emissions are therefore below the significance level and this modification can be processed under the minor modification procedures.

In its request to process these modifications using the minor modification procedure, received October 8, 1997, Eagle Gypsum requested that performance testing requirements be removed for two emission units: the crushed ore storage bins (P010) and the accelerator mill (P011). Colorado Regulation 3, Part A.II.B.36.h.(vi) requires that "...every significant change in existing monitoring permit terms or conditions;" must be considered a significant permit modification. In the case of the crushed ore storage bins (P010), the Division does not believe that removal of the performance requirement is a significant change. The emissions from the crushed ore storage bins vent inside the building and are eventually exhausted through the imp mill baghouses (P012), which are required to be stack tested. In the Division's stack test report, dated November 6, 1991, the Division indicated that no stack testing was required because emissions vent inside of the building. It was apparently an oversight for the Division to include performance testing as a monitoring requirement for the crushed ore storage bins. The Division believes that since this requirement was mistakenly included in the permit and since emissions from the crushed ore storage bins are actually monitored by performance tests on other vents, removal of the performance testing requirements is not a significant modification in monitoring.

For the accelerator mill (P011), the Division believes that since the compliance status of these units is based on performance testing that removal of these requirements constitutes a significant change in existing monitoring. The modification of the permit to remove the performance requirements would have to be processed as a significant modification following the procedures found in Reg 3, Part C.V. Because Eagle Gypsum is primarily concerned with making the modifications necessary to increase the production rate of their facility, the Division will process the minor modification first and process the modification to remove the performance testing requirement on the accelerator mill at a later date.

IV. Modeling

As part of a minor modification analysis, the Division must conduct an ambient air impact analysis to determine whether the proposed change in emissions will cause a violation of a National Ambient Air Quality Standard (NAAQS), a Colorado Ambient Air Quality Standard, or other applicable requirements. Modeling was not submitted with the permit modification request. The Division's Modeling Guidance identifies threshold levels of pollutants that require modeling. If the requested net increase in emissions exceed the threshold level for any pollutant, modeling is required. The proposed net increase in PM_{10} emissions of 8 tons per year is greater than the emission increase threshold of 5 tons per year. According to the Division's Modeling Guidance, the Division will perform a

screening analysis for a minor modification at a minor source. If the Division's screening analysis does not satisfactorily show compliance with applicable requirements, the Division will notify the source. The source will be asked to consider enforceable permit limits or conditions and/or submit a refined analysis.

A refined analysis of NO_x and PM_{10} was done by TRC Enviromental Consultants, Inc. for the source in 1990. The NO_X emission limits have decreased since the construction permits were first issued for this source and hence, the Division determined that it was unnecessary to model NO_x. Therefore, only PM_{10} emissions were modeled. The applicable requirements for PM_{10} are the NAAQS 24-hr concentration and annual concentration at 150 $\mu g/m^3$ and 50 $\mu g/m^3$, respectively. The screening analysis for this source was performed with an EPA- and Division-approved model, SCREEN3. All emission units are modeled to determine the facility's contribution to ambient PM_{10} concentrations. The remainder of this section describes the inputs of the model, how the modeling was performed, and the results of the model.

Model Inputs

The required inputs of the model are stack characteristics (stack height, inner diameter, velocity, and exhaust gas temperature) and terrain distances and elevations near the emission units. The stack characteristics were taken from the original Title V application. The emission rates were taken from the requested emission increases and/or emission limits identified in the Operating Permit. UTM coordinates of the emission units were taken from the source's original modeling report. U.S. Geological Survey topographic maps were used to determine the highest elevation for distances of 86 m (property line) and every 100 m (up to 1100 m) from the Eagle-Gypsum facility.

Initially, the most conservative emission rates were used and if necessary, these rates were relaxed to give a more realistic model. Most of the emission rates used in the model for each unit was the requested emission limit, divided by 8760 hrs/yr. For a few units (P010, P011, and P020), the hourly emission limits identified in the current permit were used since these hourly limits, if multiplied by 8760 hrs/yr, exceed the requested annual emission limit. In one case of unit P006, the pollutant concentration was based on the NSPS standard of 0.05 g/dSCM. This was conservative because the standard is for PM, not PM_{10}, and the hourly emission rate determined from the standard exceeds the current hourly emission limits identified in the permit.

The permitted emission limits for P007 (Rock Receiving) are very conservative. Both the PM and PM_{10} emission limits are the same. The hourly emission limits in the current permit exceed the NSPS standard of 0.05 g/dSCM and the emission factor (based on a November 1991 stack test) is less than the permitted hourly limits. The feed material to this process is large pieces of gypsum ore from the mine and the ore is not crushed or otherwise processed

here. Therefore, one would expect that PM emissions would far exceed PM_{10} emissions. The source was able to provide the Division with results from screening analyses performed on gypsum ore. The screening analyses identified the percentage of gypsum ore greater than and less than 1/4". The PM_{10} emission rate used in the model was the average percentage of gypsum ore less than ¼ inch multipled by PM emissions (based on hourly emission rate determined by NSPS standard 0.05 g/dSCM). The permit will be modified to reflect the difference between PM and PM_{10} emissions.

Finally for unit P018, although the source did not request a modification to this unit, the emissions for this unit had to be considered in the model. The current permit only limits the PM emission for this unit. It appears that when the construction permit (89EA432-13) was issued for this unit, the emission limits in the permit were double the emissions for these units based on the fuel consumption limit. Using AP-42 (Table 3.4-2, dated 10/96) emission factors and the fuel consumption limit, these emission limits would never be exceeded. Therefore, the PM_{10} emission rate based on AP-42 emission factor and the fuel consumption limit identified in the permit was used in the model. The permit will be modified to reflect the emissions the Division originally intended to be in this permit.

Methodology

The purpose of the modeling is to determine the maximum PM_{10} concentration that the facility can contribute to the ambient concentration. Each emission unit was modeled separately. Since the source is located in a valley, each emission unit was evaluated using both simple and complex terrain at each distance. The higher value (either simple or complex) was chosen to represent concentration at that distance. The concentrations were adjusted for the elevation of the source (the model is for souces at sea level). For each distance, the concentration from each emission unit was totaled to give a facility concentration. The maximum facility concentration was determined to be the facility contribution. The concentration contributed by the facility was added to the background concentration taken from the source's 1990 modeling report to determine the maximum ambient air concentration. The maximum ambient air concentration was then compared to the NAAQS standards.

Results

The maximum concentration occurred 200 m from the source and the results are summarized in the table below.

Point ID	Description	Maximum Concentration (μg/m3) SCREEN3 results 1-hr	Adjusted for Elevation (29.92 to 23.59 in. Hg) 1-hr	Adjusted using general case factors 24-hr	Annual
P001	TURBINES	0.2	0.22	0.09	0.02
P003	DRY ADDITIVES	0.0	0.02	0.01	0.00
P004	END TRIM	5.0	6.4	2.5	0.5
P005	PAPER CREASING/SCORING	0.4	0.5	0.2	0.0
P006	CRUSHING/SCREENING	17.1	21.7	8.7	1.7
P007	ROCK RECEIVING	37.6	47.7	19.1	3.8
P008	CONVEYORS	0.9	1.2	0.5	0.1
P010	ORE STORAGE	7.5	9.6	3.8	0.8
P011	ACCELERATOR MILL	0.4	0.5	0.2	0.0
P012	IMP MILLS	14.0	17.8	7.1	1.4
P015	ZONE DRYERS	6.6	8.4	3.3	0.7
P018	DIESEL GENERATORS	5.1	6.5	2.6	0.5
P020	WASTE RECLAIM	9.9	12.5	5.0	1.0
			Maximum Total Concentration	53	11
			Background Concentration	49	17
			Maximum Total Concentration + Background	102	27
			Standard	150	50
			Above NAAQS Standard	**No**	**No**

Th
e results show pollutant concentrations below the 24-hr and annual standard for PM_{10}. In summary, the model predicts maximum concentrations of 102 and 27 $\mu g/m^3$ for the 24-hr and annual standard, respectively. These values are well below the standards of 150 and 50 $\mu g/m^3$. The screening analysis indicates that these modifications will not violate the ambient air quality standards. No further modeling is required at this time.

V. Discussion of Modifications Made

In addition to the requested modifications made by the source, the Division used this opportunity to include changes to make the permit more consistent with recently issued permits as well as correct errors or omissions identified during inspections and/or discrepencies identified during review of this modification. A table is attached that shows the requested actual emission limits and the emission limits included in the modified operating permit.

The Division has made some revisions to the Operating Permits based on recent internal permit processing decisions and made these changes to the Eagle-Gypsum Operating Permit with the processing of this minor permit modification. These changes include adding two new headings under Section I (General Activities and Summary) of the permit and changes to the Annual Compliance Certification (Appendix C). These headings address Prevention of Significant Deterioration (PSD) or Major New Source Review (NSR) and the Accidental Release Prevention Program (112(r)). The language to be included in these sections has already been included in the Technical Review Document that supports the Operating Permit written for this facility. The Annual Compliance Certification has been modified to include the Accidental Release Prevention requirements (i.e. is the facility subject and if so, has or will a Risk Management Plan been submitted).

In processing this modification, the Division determined that some of the emission factors were not appropriate. Many of the emission factors are based on stack testing, which is an appropriate source; however, the emission factors identified in the original operating permit were in lbs/hr which is not an acceptable way of expressing an emission factor. During this modification, the Division converted lbs/hr emission factors to emission factors that are dependent on the quantity of material processed, not on hours of operation.

The specific changes made to each emission unit under the permit requirements listed in Section II of the permit are as follows:

<u>P001 - Two (2) Natural Gas Fired Turbines</u>

The source requested an increase in emissions, fuel consumption and hours of operation. Hourly emission limits were adjusted by dividing the requested annual emission rate by the maximum hours one turbine can be operated (8736). Hourly fuel consumption limits were adjusted by dividing the annual requested fuel consumption limit by the maximum hours one turbine can be operated (8736). The Division clarified the NO_X requirement of 170 ppmvd. The NSPS standard (§ 60.335) requires that NO_X be at ISO standard ambient conditions. This clarification was added to the permit. In addition, the permit previously identified that the facility wide emissions were limited to 250 tpy of NO_X. This

requirement came from the construction permit (89EA432-1) which was based on higher NO_X emission limits for these units as well as on the NSPS standard. Since the initial issuance of this construction permit, the source demonstrated that these turbines emitted at a much lower rate than the NSPS standard and as a result reduced the NO_X emission limits for the turbines. All significant emission units at Eagle-Gypsum had been issued construction permits and therefore have enforceable limits on their potential to emit. With this modification, the source will have a PTE of less than 200 tpy of NO_X (for significant emission units only) and it is unlikely that the insignificant activities will add an additional 50 tpy of NO_X. It is therefore unnecessary to include the 250 tpy facility wide emission limit. Therefore, in an effort to streamline permit requirements, this 250 tpy facility wide limit is being removed from the permit. The Division also clarified in the table, which requirements were applicable to <u>both</u> turbines and which requirements were applicable for <u>each</u> turbine.

<u>P003 - Dry Additives Conveying System</u>

The source requested an increase in annual emissions and consumption of wallboard additives. There were no short term limits for emissions and/or wallboard consumption in the original permit and none were added with this modification. The modification was made as requested.

<u>P010 - Crushed Ore Storage Bins</u>

The source requested an increase in the annual emission limits as well as an increase in the annual processing rate of raw gypsum. The source also requested that the performance testing requirements for this unit be removed since the stack vents inside the building, which is a situation similar to unit P003 (dry additives). The Division removed the performance testing requirement and moved the table for this unit to Section II.2, since the applicable requirements and periodic monitoring requirements are the same as P003 (dry additives).

In the existing permit, the emission factors for this unit are in lbs/hr; however, no stack test had ever been done for this unit. Therefore, the emission factors used in the Division's March 17, 1994 Preliminary Analysis (PA) were used in the modified operating permit. These emission factors (PM = 0.7 lbs/ton, PM_{10} = 0.15 lbs/ton) are from EPA 450/4-90-003, Source Classification Code 3-05-015-04 (conveying gypsum). An efficiency of 99% is applied to the annual emission calculation, provided the maintenance and inspection requirements on the baghouse are performed as required in the permit.

P007 - Rock Receiving

The source requested an increase in the annual emission limits and the annual raw gypsum processing rates. In addition, the emission factors for this unit in the existing permit are in lbs/hr and therefore require modification.

Stack tests were performed in April 1991 and September 1997 for this unit. The only production data included with the 1991 stack test was the wallboard production rate. Since the April 1991 stack test results were much higher than the 1997 stack test, the 1991 stack test results were used with the 1997 production rates (daily rock dumping rate). The average hourly emission rate (lbs/hr) from the 1991 stack test were divided by the rate of gypsum dumped (213 tons/hr) at rock receiving on the day of the stack test. In the current permit, the PM_{10} emission limit/factor is the same as the PM emission limit/factor. Due to the nature of the material involved (large chunks of gypsum ore) and the lack of material processing (this unit collects and transports raw gypsum ore, no actual processing occurs) it is unreasonable for the PM_{10} emissions to be equal to the PM emissions. Based on data provided by the source, the Division determined that PM_{10} emissions are about 40% of PM emissions. This is based on the results of screening analyses performed on the raw gypsum ore. An average value of the percent of ore < ¼ inch was considered to be PM_{10}. This is still a conservative value of PM_{10}. Therefore, the PM_{10} emission factor was assumed to be 40% of the PM emission factor.

The production data (daily rock shipments) from the 1997 stack test report indicated that the hourly gypsum processing rate for rock receiving should be increased. In a December 30, 1997 fax, the source requested increases in the hourly gypsum process rates for rock receiving (P007), screening and crushing (P006), crushed ore storage (P010) and stucco conveying (P008). Annual emission limits were determined by multiplying the emission factor by the requested annual gypsum processing rate. The calculated emissions for both PM and PM_{10} were lower than the source originally requested. The source, in its December 30, 1997 fax agreed to the lower annual emission limits. The hourly emission limits did not require changes.

P006 - Screening and Crushing of Ore

The source requested an increase in the annual emission limits as well as an increase in the annual processing rate of raw gypsum. In addition, the emission factors for this unit in the existing permit are in lbs/hr and therefore require modification.

Stack tests were performed in April 1991 and September 1997 for this unit. The only production data included with the 1991 stack test was the wallboard

production rate. It is likely that the gypsum processing rate at the crusher is higher than that of the wallboard production rate. Therefore, the 1997 stack test data was used to develop an emission factor. The emission factor was calculated by dividing the highest lbs/hr value (0.33 lbs/hr) from the stack test divided by the rate of gypsum dumped (213 tons/hr) at rock receiving on the day of the stack test. Based on the results of screening analyses of raw gypsum (as discussed under rock receiving), the emission factor for PM_{10} was assumed to be 40% of the emission factor for PM.

The production data (daily rock shipments) from the 1997 stack test report indicated that the hourly gypsum processing rate for rock receiving should be increased. In a December 30, 1997 fax, the source requested increases in the hourly gypsum process rates for rock receiving (P007), screening and crushing (P006), crushed ore storage (P010) and stucco conveying (P008). Annual emission limits were determined by multiplying the emission factor by the requested annual gypsum processing rate. The annual emissions for PM were consistent with what the source had originally requested. However, the calculated emissions for PM_{10} were lower than the source originally requested. The source, in its December 30, 1997 fax agreed to the lower PM_{10} annual emission limits. Because of the emission factor change and the increase in hourly gypsum processing, the hourly emission limits for PM were increased.

P008 - Screw Conveyors

The source requested an increase in the annual emission limits as well as an increase in the annual processing rate of calcined gypsum. In addition, the emission factors for this unit in the existing permit are in lbs/hr and therefore required modification.

Stack tests were performed in April 1991 and September 1997 for this unit. The only production data included with the 1991 stack test was the wallboard production rate. It is likely that the gypsum processing rate at the screw conveyors is higher than that of the wallboard production rate. Therefore, the 1997 stack test data was used to develop an emission factor. The emission factor was calculated by dividing the highest lbs/hr value (0.65 lbs/hr) from the stack test divided by the rate of gypsum dumped (213 tons/hr) at rock receiving on the day of the stack test. Although it is most likely a conservative assumption, the PM and PM_{10} emission factors were assumed to be the same.

The production data (daily rock shipments) from the 1997 stack test report indicated that the hourly gypsum processing rate for rock receiving should be increased. In a December 30, 1997 fax, the source requested increases in the hourly gypsum process rates for rock receiving (P007), screening and crushing (P006), crushed ore storage (P010) and stucco conveying (P008). Annual emission limits were determined by multiplying the emission factor by the requested annual gypsum processing rate. The calculated emissions for both PM

and PM_{10} were lower than the source originally requested. The source, in its December 30, 1997 fax agreed to the lower annual emission limits. Because of the emission factor change and the increase in hourly gypsum processing, the hourly emission limits for both PM and PM_{10} were increased.

P011 - Accelerator Mill

The source requested an increase in the annual emission limits as well as an increase in the annual processing rate of gypsum rock. In addition, the emission factors for this unit in the existing permit are in lbs/hr and therefore required modification.

A stack test was performed in April 1991 for this unit. The source requested that the Division remove the performance testing requirements from this unit. The Division has determined that this change requires processing as a significant modification and that change will be made at a later date. The emission factors for this unit were determined using the 1991 stack test results. The 1991 stack test report only identified production data for Mft^2 of wallboard produced. It was not clear how closely the wallboard production rates compared with the accelerator mill processing rates. Therefore, the emission factor was calculated using the highest emission rate from the stack test (0.014 lbs/hr) divided by 90% of the hourly ore processing rate. The PM and PM_{10} emission factors were assumed to be equal.

Annual emission limits were determined by multiplying the emission factor by the requested annual gypsum processing rate. The calculated emissions for both PM and PM_{10} were higher than the source originally requested. Hourly emission limits were increased by multiplying the emission factor by the hourly ore processing rate.

P004 - End Trim Reclaim

The source requested an increase in annual emissions and wallboard processing rate. An error was found in the permit based on a recent inspection and the error was corrected with this modification. The short term processing rate of wallboard was identified as 72,000 sq ft/day in the existing operating permit; however, Construction Permit 89EA432-3 identified the short-term wallboard production limit as 72,000 sq ft/hr. The short-term wallboard production limit was changed from a daily to an hourly limit in the modified permit. Due to the requested increase in wallboard production, the hourly wallboard production limit was increased to 85, 600 sq ft/hr by dividing the requested annual wallboard production rate by 8760 hrs/yr. Language was added to condition 4.2. to require the source to calculate an actual hourly wallboard production rate.

The emission factors identified in the existing permit for this unit are from the 1991 Stack Test and are in lbs/hr and therefore had to be changed. The PM

emission factor was determined using the highest stack test result from the April 1991Stack Test (0.63 lbs/hr) divided by the production rate for that day of testing (33 Mft^2/hr). Based on AP-42, Section 8.14 (gypsum processing),Table 8-14.1 (7/93), for this type of process PM_{10} emissions are 75% of PM emissions. Therefore, the PM emission factor calculated from the stack test was multipled by 0.75 to get the PM_{10} emission factor. Due to the change in emission factors, it was necessary to increase the annual emission limits above the level requested by the source. It was also necessary to increase the hourly emission limits.

P005 - Paper Creasing, Scoring and Buffing System

The source requested an increase in annual emissions and in wallboard processed and the increases were made as requested. The existing permit identifies an hourly limit of 33 lbs/hr for PM. This limit is based on the particulate limits on manufacturing processes in Colorado Regulation No. 1, Section III.C.1.b and was not identified in Construction Permit 89EA432-4. Because this number is so large compared to the annual emission limits this requirement was removed during the permit modification. Construction Permit 89EA432-4 did not identify any short-term processing or emission limits so no short-term limits have been included.

The emission factors for this unit in the existing permit are in lbs/hr and according to the Technical Review document these emission factors are based on stack testing. However, this unit was never stack tested and it appears that the emission factors used were based on the Division's March 17, 1994 preliminary analysis (PA). No appropriate published emission factors could be found and the Division's March 17, 1994 PA indicated that the source of the emission factors were from AP-42. For this permit modification, emission factors were calculated by dividing the requested emission limit by the average hourly wallboard throughput (requested wallboard throughput divided by 8760 hrs/yr).

P012 - Impact Mills

The source requested an increase in the annual emission limits (except that a decrease in emissions was requested for VOC), in the annual raw gypsum processing rate and in the annual natural gas consumption rate for the natural gas burners. These changes were made as requested. The hourly natural gas consumption rate was increased to 77,000 scf (based on requested annual natural gas consumption divided by 8760 hrs/yr). The hourly emission rates were adjusted by multiplying the hourly natural gas consumption limit by the emission factor. Because the actual uncontrolled emissions for VOC and SO_2 are below APEN de minimis levels (2 tpy) and because there are limits on natural consumption for the IMP mill burners, which limit the PTE of these burners to < 2 tpy, the Division has removed the emission limits for VOC and SO_2 from the permit. The hourly raw gypsum processing rate was adjusted by dividing the requested annual raw gypsum processing rate by 8760 hrs/yr. In addition, as

discussed under the gas-fired turbines, the requirement to maintain facility wide emissions of NO_X below 250 tpy has been removed. The significant emission units at this facility are all permitted and the total permitted facility emissions of NO_X are below 200 tpy. The Division also clarified in the table, which requirements were applicable to all three impact mills/burners/stacks and which requirements were applicable for each impact mill/burner/stack.

The PM and PM_{10} emission factors in the existing permit are in lbs/hr. The Technical Review document for the original permit indicated that these emission factors were based on the 1991 Stack Test. The emission factors in the modified permit are based on the September 1997 Stack Test. The emission factors were determined by dividing the highest emission rate (0.25 lbs/hr), for any one vent, by the hourly gypsum consumption rate (35.9 tons/hr) during that day of testing. Hourly gypsum consumption rates were determined dividing the Mft^2 of wallboard produced on the day of testing by the hours of operation on that day. According to the source, 1 Mft^2 of wallboard contains 0.9 tons of gypsum. Due to the change in emission factors, it was necessary to increase the annual emission limits for PM and PM_{10} above the level requested by the source. It was also necessary to increase the hourly emission limits for both PM and PM_{10}.

P015 - Wallboard Dryers

The source requested an increase in the annual emission limits (except a decrease in emissions was requested for VOC) and in the annual natural gas consumption limit for the dryers. These changes were made as requested. The hourly emission limits for all pollutants except NO_X were adjusted by multiplying the hourly natural gas consumption limit. The hourly emission limits for NO_X did not have to be adjusted, nor did the hourly gas consumption limit have to be adjusted. Because the actual uncontrolled emissions for VOC and SO_2 are below APEN de minimis levels (2 tpy) and because there are limits on natural consumption for the dryers, which limit the PTE of these dryers to < 2 tpy, the Division has removed the emission limits for VOC and SO_2 from the permit. In addition, as discussed under the gas-fired turbines, the requirement to maintain facility wide emissions of NO_X below 250 tpy has been removed. The significant emission units at this facility are all permitted and the total permitted facility emissions of NO_X are below 200 tpy. The Division also clarified in the table, which requirements were applicable to all three dryers/stacks and which requirements were applicable for each dryer/stack.

P018 - Diesel Generators

The source did not request any change in the emission limits for these units; however, the Division adjusted these emission limits to correspond more closely with the fuel consumption limits for these units. The source approved this adjustment in their December 30, 1997 fax. The Division's preliminary analysis for the initial issuance of this permit (8/28/90), indicated the potential emission

rates of the generators, with fuel consumption of 28,000 gal/yr each (56,000 gal/yr total) as follows: PM = 0.94 tpy, CO = 2.86 tpy, SO_2 = 0.88 tpy and NO_X = 13.13 tpy. When the construction permit was issued, the emission limits (with the exception of CO) were double these potential emissions. The permit was modified to put these original potential emissions into the permit as limitations. Because the actual uncontrolled emissions for PM and SO_2 are below APEN de minimis levels (2 tpy) and because there are limits on diesel fuel consumption for the generators, which limit the PTE of these burners to < 2 tpy, the Division has removed the annual emission limits for PM and SO_2 from the permit. The SO_2 limit of 0.8 lbs/mmBtu was not removed. In addition, the Division included provisions for the source to determine the sulfur content and the heat content of the fuel by either sampling or vendor records. The Division also clarified in the table, which requirements were applicable to both generators and which requirements were applicable for each generator.

P020 - Waste Reclaim System

The source did not request any modifications to this emission unit and no modifications were made.